

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
14 July 2005 (14.07.2005)

PCT

(10) International Publication Number  
**WO 2005/063999 A1**

(51) International Patent Classification<sup>7</sup>: **C12P 7/64**,  
C12M 1/00, 1/04

(21) International Application Number:  
PCT/EP2004/014884

(22) International Filing Date:  
28 December 2004 (28.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
03258249.6 30 December 2003 (30.12.2003) EP

(71) Applicant (for all designated States except US): **DSM IP  
ASSETS B.V.** [NL/NL]; Het Overloon 1, NL-6411 TE  
Heerlen (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SCHAAP, Al-  
bert** [NL/NL]; Smitshoek 13, NL-2993 BG Barendrecht  
(NL). **VERKOELJEN, Daniel** [NL/NL]; Pootstraat 111,  
NL-2613 PH Delft (NL).

(74) Agents: **ELKENBRACHT, Johan, Christiaan** et al.;  
DSM Intellectual Property, Delft Office (600-0240), P.O.  
Box 1, NL-2600 MA Delft (NL).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: **DEAERATION PROCESS**

(57) Abstract: A process for producing an oil, or a polyunsaturated fatty acid (PUFA), is described where an aqueous liquid compris-  
ing cells is deaerated, and the oil or PUFA is obtained from the cells. Deaeration can be performed by a wide variety of techniques,  
including the application of a vacuum (or reduced pressure), mechanical deaeration or degassing by reduced stirring or subjecting the  
broth to centrifugal forces, reducing viscosity (by dilution or heating), reduction in the supply of oxygen or air during fermentation  
or a reduction in stirring rate, lowering the pH (to lower the solubility of CO<sub>2</sub>), filtration using PTFE capillaries, gas displacement  
(by bubbling in nitrogen or helium) or chemical deaeration (using oxygen scavengers).

WO 2005/063999 A1